

→ 10th COASTAL ALTIMETRY WORKSHOP



# Ten years and counting

## a summary of the 10<sup>th</sup> Coastal Altimetry Workshop

[www.coastalaltimetry.org](http://www.coastalaltimetry.org)

Jérôme Benveniste, Paolo Cipollini, Stefano Vignudelli

*with the CAW-10 Session Chairs:* Pascal Bonnefond, Jerome Bouffard, Mathilde Cancet, David Cotton, Claire Dufau, Luciana Fenoglio-Marc, M. Joana Fernandes, Marie-Laure Frery, Jessica Hausman, Kaoru Ichikawa,

Svetlana Karimova, Marcello Passaro, Ole Roggenbuck, Remko Scharroo, Walter Smith, John Wilkin and Guy Wöppelmann

and past & present CAW OrgComm Members: Hans Bonekamp, Laury Miller, Nicolas Picot, Ted Strub, Doug Vandemark



## CAW-10, Florence, 21-24 Feb 2017

- Yet another successful workshop for the Coastal Altimetry Community
- **2.5 days, 118 participants from 28 countries, 73 Abstracts, 35 Talks, 38 posters**
- Organized with local support of LaMMA Consortium in Florence
- Combined with SAR Altimetry Training Course

# Challenges and Opportunities for Coastal Altimetry

EOS  
*Earth & Space Science News*

10th Coastal Altimetry Workshop; Florence, Italy, 21–24 February 2017

**Short summary (Vignudelli et al) published on EOS**

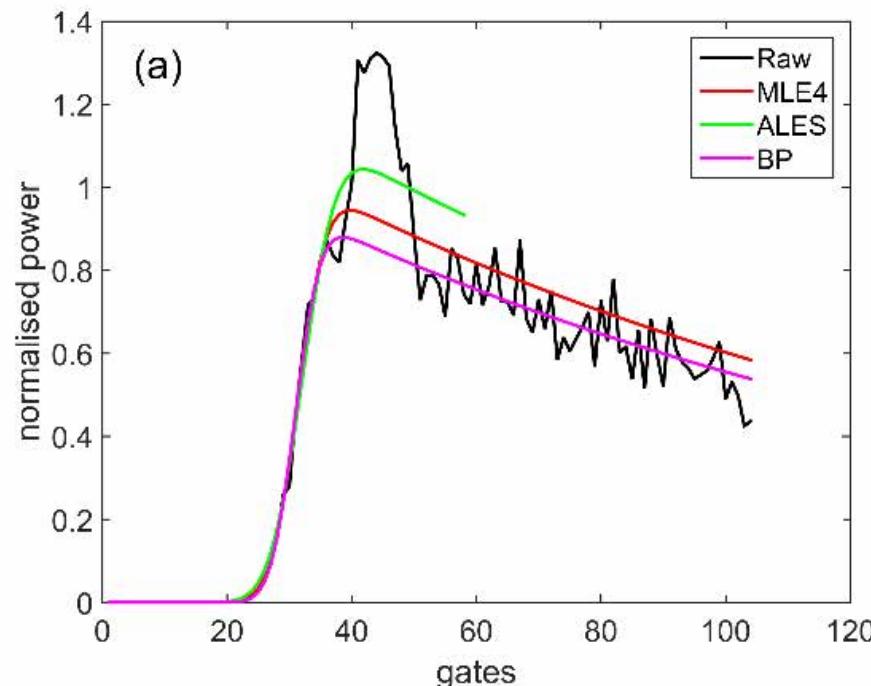
A full workshop report is available on [www.coastalt.eu](http://www.coastalt.eu)



# Ongoing efforts

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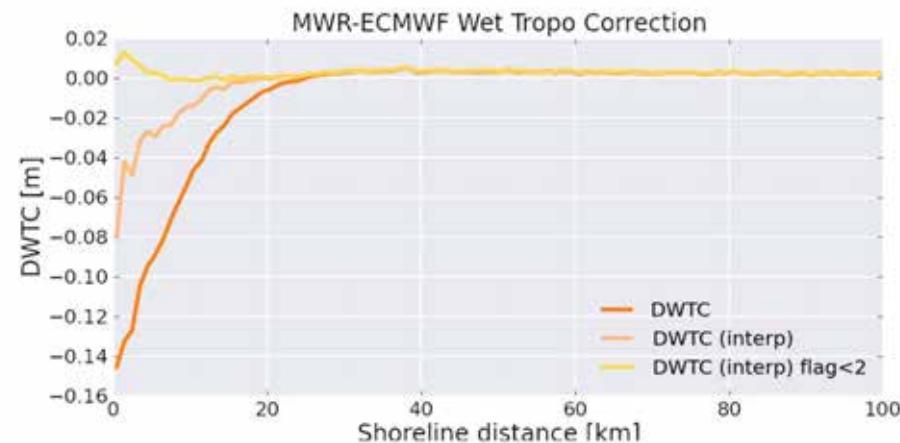
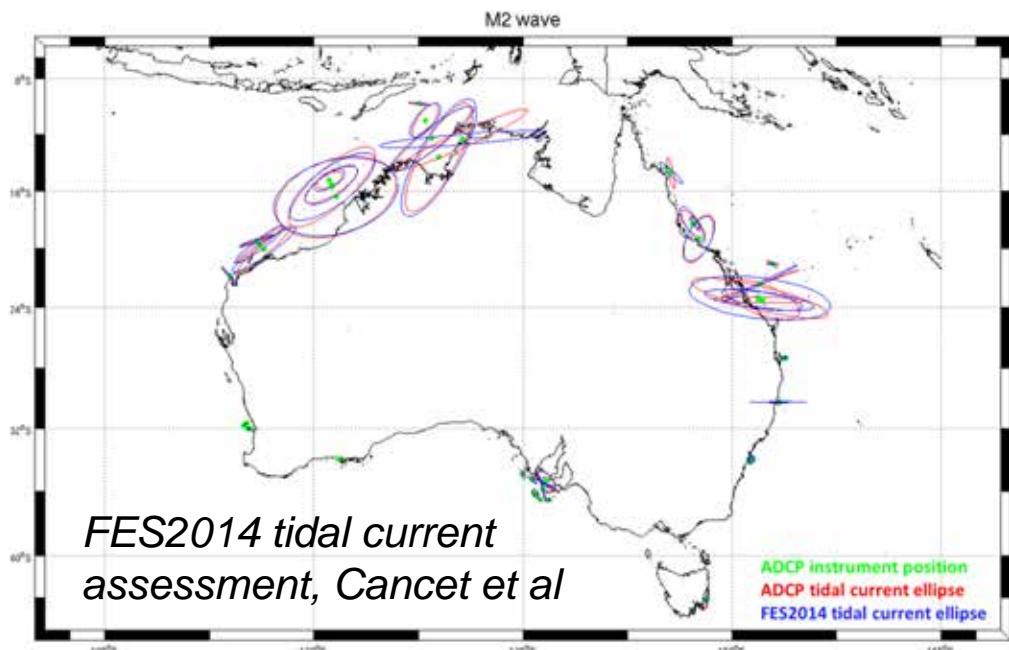
- Coastal retrackers continue to be developed and tested



*Brown-Peaky (BP)  
retracking,  
Peng & Deng*

# Ongoing efforts

- Coastal retrackers continue to be developed and tested
- Continuing improvements in corrections



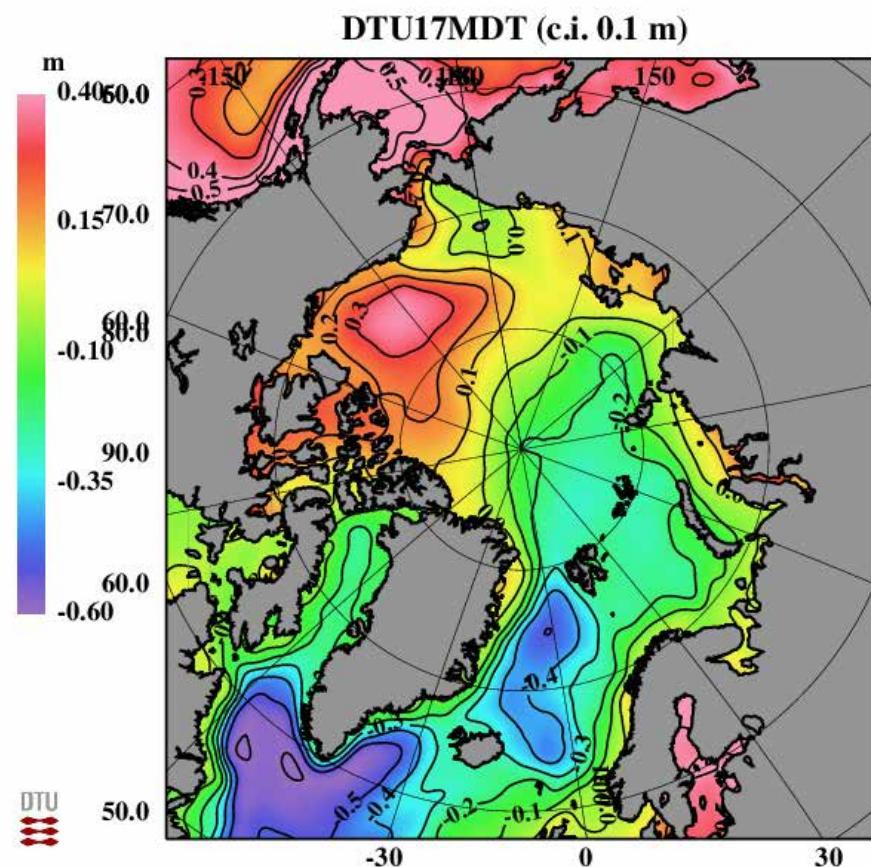
New coastal algorithm and interpolation for S-3 WTC,  
Frery et al

## Wet Tropo:

- improved retrievals from existing radiometers
- combination of multiple datasets
- design of new instruments with higher resolution

# Ongoing efforts

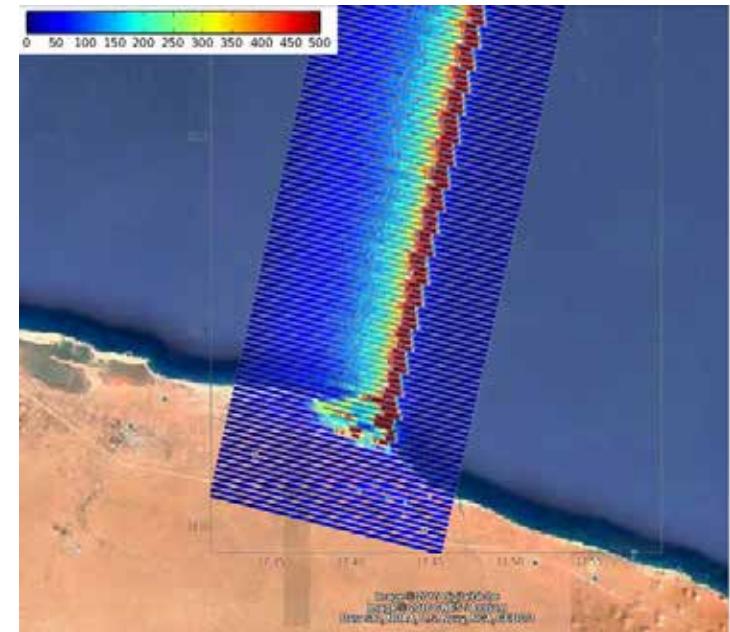
- Coastal retrackers continue to be developed and tested
- Continuing improvements in corrections
- Improvement in MSS/MDT models



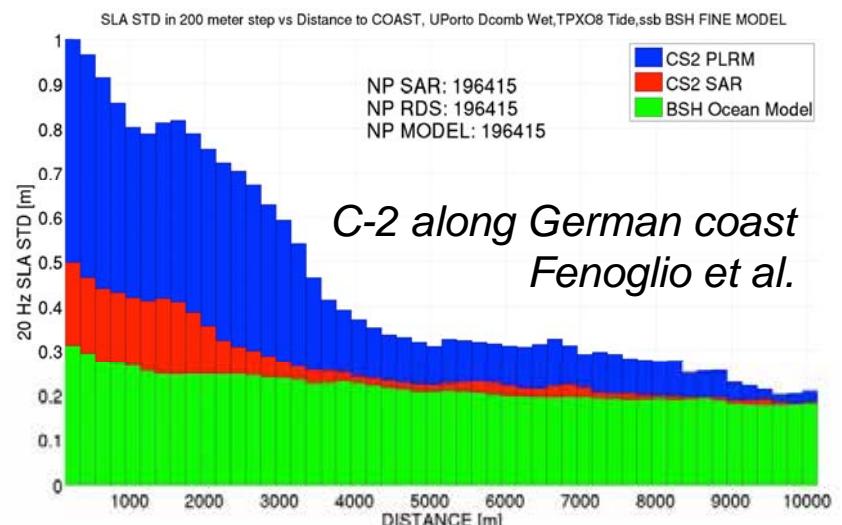
*New MDT, Andersen and Knudsen*

# Ongoing efforts

- Coastal retrackers continue to be developed and tested
- Continuing improvements in corrections
- Improvement in MSS/MDT models
- Several performance assessment and regional cal/val efforts



S-3 SAR mode coastal performance,  
Raynal et al

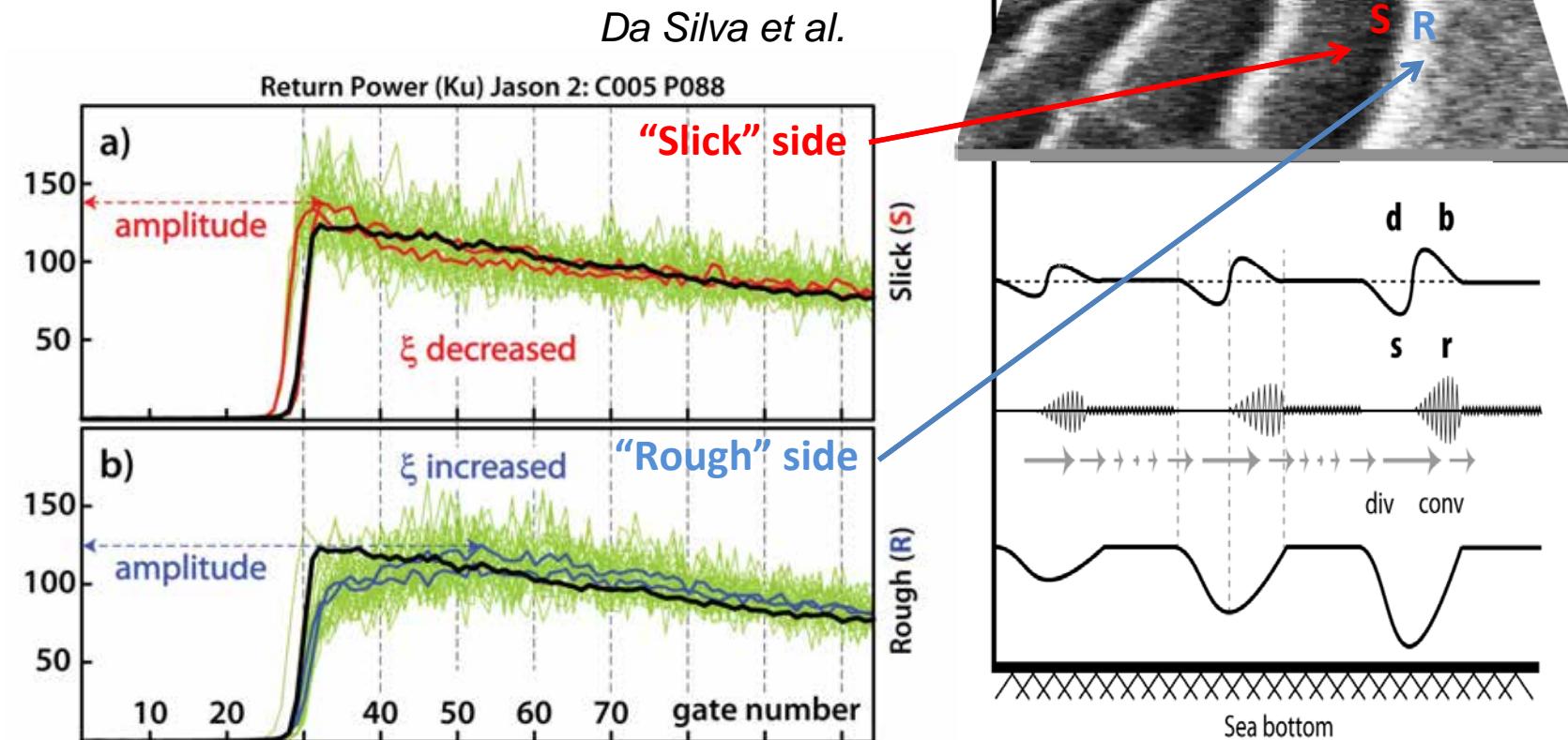


C-2 along German coast  
Fenoglio et al.

# Some highlights

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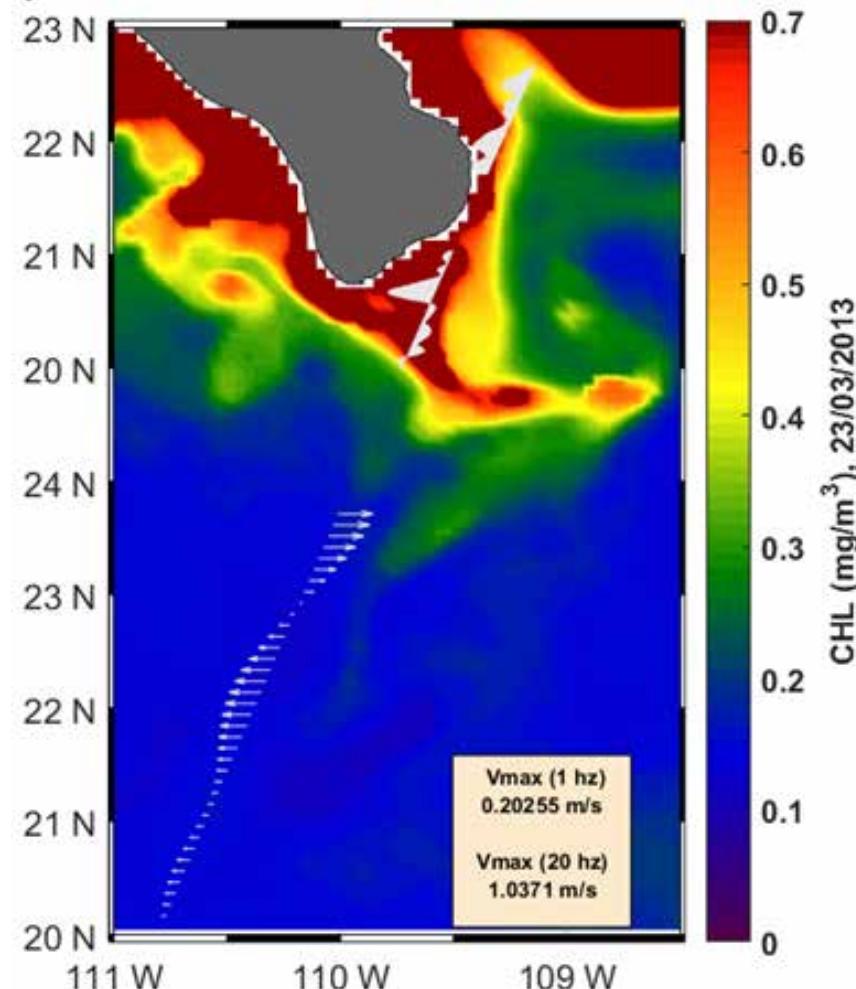
- Observations of Internal solitary waves



# Some highlights

- Observations of Internal solitary waves
- Coastal Currents

Currents from Jason-2: 20 Hz (ALES) and 1 Hz (SGDR)  
Torres-Hernández et al.

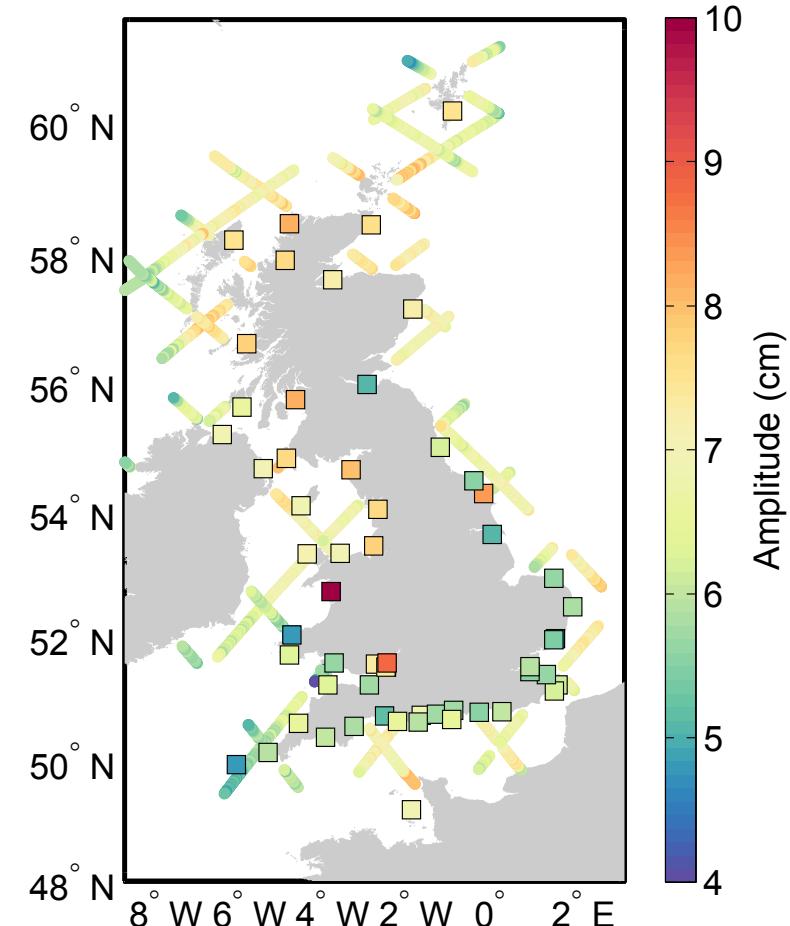


# Some highlights

- Observations of Internal solitary waves
- Coastal Currents
- Coastal Sea Level

*Coastal Sea Level around the UK, Cotton et al.*

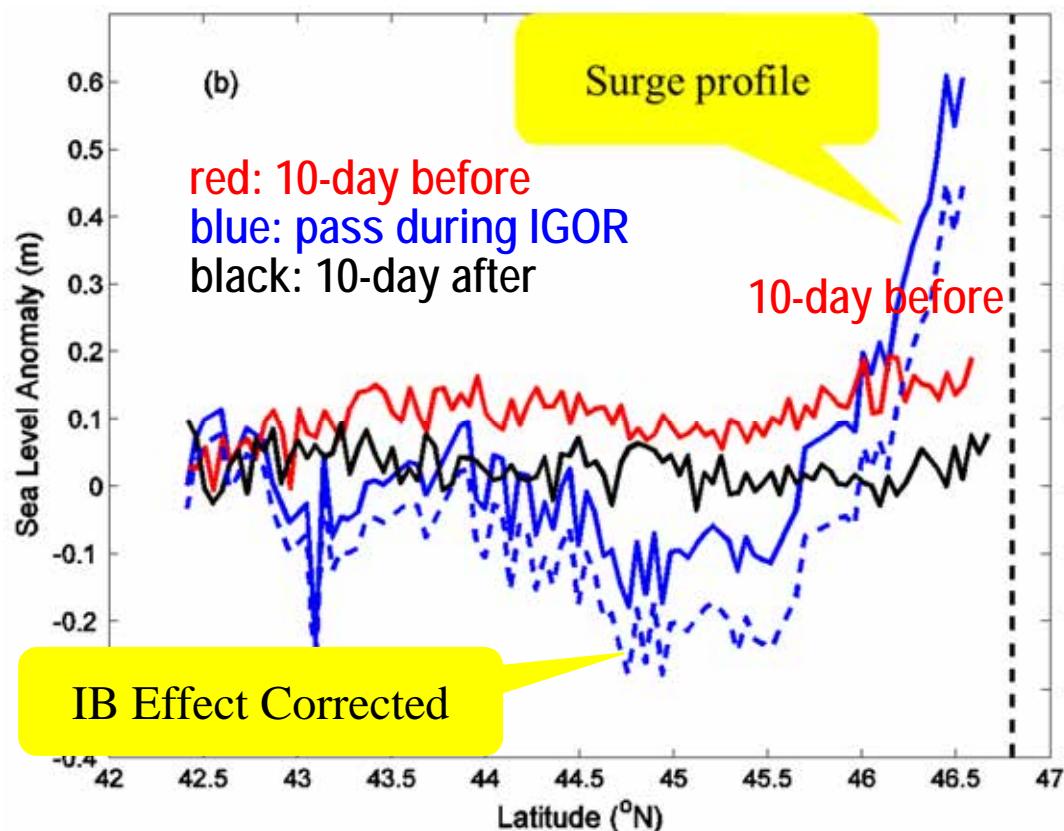
## Annual amplitude



# Some highlights

- Observations of Internal solitary waves
- Coastal Currents
- Coastal Sea Level
- Extreme events (for instance storm surges)

*Surge from Hurricane Igor  
observed by Jason-2  
G. Han*



GODAE OceanView



## Altimetry for Regional and Coastal Ocean Models

Special session chaired by C. Dufau, O. Roggenbuck, J. Wilkin

- I. Discuss the interest of sea level measurements for the regional/coastal ocean modellers and COFS
- II. Present the available altimetry missions and products; discuss recent advances and projects
- III. Discuss how altimetry can improve the forecast quality and enable new applications in the regional/coastal oceans
- IV. Discuss how to use altimetry products in R/COFS for assimilation and validation
- V. Establish a community of practice to advance complementary uses of coastal altimetry in regional/coastal modelling and prediction, involving the COSS community and the regional altimetry groups

# Some challenges remain

- Need more accurate **bathymetry** to further improve coastal tides
- **Coastal MSS** still important source of error
- **Submesoscale** dynamics is a unifying target for coastal and open ocean altimetry community, but we need further understanding of what can be really captured by the various techniques
  - obvious links with SWOT community!
- Key challenge: **Data Access and User Support**

# Available Coastal Altimetry Products as of July 2017

Updated table with links  
at [www.coastalt.eu](http://www.coastalt.eu)

ID	Produced by	Altimeter	Product level	Posting rate	Coverage	Download from	Comments
PISTACH	CLS CNES	j2	L2	20 Hz	Global	AVISO+	Experimental Jason-2 products for Hydrology and Coastal studies with specific processing. Will be discontinued at the end of 2016 in favour of PEACHI
PEACHI	CLS CNES	sa, (j2 to be added soon)	L2	40 Hz	Global	AVISO+ / ODES	Experimental SARAL/AltiKa products including dedicated retracking and corrections leading to more accurate products for coastal zones, hydrology and ice. From 2017 expected to be replaced by Jason-3 products
XTRACK	LEGOS- CTOH	tx, j1, j2, (j3 to be added soon)					Using improved data screening and latest processing
ALES	NOC	j2, n1, (j1 to be added soon)					from the ALES processor included in the standard products and outside the standard products and
SARvatore	ESA-ESRIN	c2 (SAR only)	L2	20 Hz	SAR mode regions	ESA GPOD	data where the user can configure some processing parameters to meet specific requirements (for instance for the coastal zone)
COP	ESA	c2 (LRM/PLRM)	L2	20 Hz	Global	ESA	Global products for CryoSat-2 from an Ocean processor (output is in PLRM over the SAR mode regions) - but no specific coastal processing
COSTA	DGFI-TUM	e2,en (j1,j2,e1 to be added soon)	L3	1 Hz 20 Hz	Mediterranean and North Sea	PANGAEA	Dedicated coastal altimetry sea level measurements based on enhanced ALES retracker

**We need unified products**  
 with consistent formats, good documentation,  
 limited set of predefined processing choices for  
 basic users, etc

Abbreviations: **e1**: ERS-1; **tx**: TOPEX; **e2**: ERS-2; **gfo**: GEOSAT Follow-On-1; **j1**: Jason-1; **n1**: Envisat; **j2**: Jason-2; **c2**: CryoSat-2; **sa**: SARAL/AltiKa; **j3**: Jason-3. For CryoSat-2 (c2) LRM/PLRM are Low-Resolution Mode and Pseudo-LRM and SAR for Synthetic Aperture Radar mode. Product levels: L2: along-track data with corrections; L3: data projected to reference points along nominal satellite ground track.

*Cipollini et al. 2017, in Satellite Altimetry Over Oceans and Land Surfaces, CRC Press*

# 10 years in review

- CAWs (since CAW-1 Silver Spring 2008) have supported the inception and growth of a specific community
  - Coastal Altimetry is now a recognised topic as well as an established mission target for the latest altimeters S-3/6
  - Over the 10 years:
    - **313 talks, 229 posters**
    - all on [www.coastalt.eu](http://www.coastalt.eu)
    - average attendance: **95**



# CAW-11

Co-located with SWOT SWT

Two days, end of June, 2018

(precise date to be announced soon)



# Montreal, Canada

Summary of CAW10 Florence (21-24 Feb 2017) to OSTST Miami (23-27 Oct 2017)